Common GTAW problems – Causes & Remedies

1.0 COMMON WELDING DEFECTS OBSERVED IN GTAW PROCESS:

The process variables, materials or welding procedures can affect the weld quality. Some of the commonly observed defects in GMA welding and their possible remedies are tabulated below.

	Possible Causes	***Corrective Actions***
	Inclusions	
1.	Cleanliness of the base plate.	• Clean the plate before making weld passes.
2.	High travel speeds (film type inclusions).	• Reduce the travel speed.
	Porosity	
1.	Inadequate shielding of arc and weld pool.	• Increase the shielding gas flow. • Eliminate drafts (from fans, open doors etc.) blowing into the welding arc. • Reduce the arc gap. • Hold the gun till the molten crater solidifies.
2.	Work-piece contamination.	• Remove oil, grease, rust, paints and dusts from the work surface prior to welding.
	Incomplete fusion	
1.	Work-piece surface not clean.	• Clean all groove surfaces and weld zones.
2.	Insufficient heat input.	• Increase the current or reduce the diameter of the filler metal. • Decrease the travel speed. • Set the appropriate torch angle. • Length-wise grind the tip.
3.	Too large a weld puddle.	• Reduce arc weaving.
4.	Improper welding technique.	• Direct the electrode at the leading edge of the weld pool.
5.	Improper joint design.	• Select proper groove design.

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	Possible Causes	*Corrective Actions*
	Lack of penetration	
1.	Improper joint preparation.	• Provide/Increase root openings in butt-joint. • Decrease the height of root face.
2.	Improper welding technique.	• Maintain the arc on the leading edge of the weld pool. • Select proper travel angle to achieve maximum penetration.
3.	Inadequate heat input.	• Select right diameter of electrode. • Increase the welding current. • Maintain proper torch angle.
	White patches in radiographic film	
1.	Tungsten electrode contamination.	• Avoid touching the electrode with the weld metal. • Re-grind the electrode to desired shape.